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ABSTRACT

Problems of developing countries that could be addressed with studies of time use are identified and associated methodological issues are discussed. Time use studies investigate how individuals allocate time among various activities. Such studies have revealed sex and age differences in time spent at work among adults and children of various societies, thus providing a view of the extent of women's and children's work and a perspective on the choices women make about their children when time is scarce. However, in order to meet quality standards in the quantitative social sciences, more stringent efforts must be made to improve the quality of time use data being collected. As a step toward this end, ten time use studies from developing countries using three kinds of methodology (observation, sequential recall and activities recall methods) are examined and ranked in terms of 12 methodological issues. Issues raised include problems of reliability, validity, coding, justifications for age classifications of children, sample coverage and quality of time use. Methodological improvements for time use studies are suggested. (Author/RH)

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METHODOLOGICAL ISSUES IN COLLECTING TIME USE DATA IN DEVELOPING COUNTRIES

Patricia L. Engle and William P. Butz

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Data in the social and psychological sciences are usually collected to answer a specific question, or at the broadest, to illuminate issues in a specific disciplinary area. Expenditure surveys, for example, are designed to describe how families spend their income. Labor force surveys focus on work patterns. Modernity surveys, KAP (Knowledge, Attitude and Practice of family planning) questionnaires, and political opinion polls have obvious specific purposes. Mental test data and observations of behavior assess various forms of competence. With its specific disciplinary focus, it is natural that each type of data is usually collected by persons in that discipline. There are experts in general issues of survey design and operation and in experimental design, to be sure, but economists generally gather the economic data, psychologists the psychological data, and so on.

It is difficult to think of generic categories of data that appear equally useful in very different disciplines and that are therefore being separately collected by investigators in very different fields. Time use data are of this type. For at least fifty years, American home economists have recorded women's use of time in order to describe how patterns of household work change with the presence of children, appliances, convenience foods, and work opportunities outside the home. In the last twenty years, a few sociologists and economists have documented people's time use in the U.S. and Europe to analyze labor productivity and use of leisure time. Other economists and home economists, but especially anthropologists, have attempted to document people's time use in less developed countries. Their objectives have been diverse, including the calculation of opportunity cost of women's time spent at home, description of informal-labor-market activities, and analysis of agricultural production patterns. Quite independently, some psychologists have collected time use data for their own purposes.

For instance, psychologists like Goldberg (1981) have been particularly interested in parents' time spent with children and the effects of these time investments on children's mental and socio-emotional development.

This paper focuses on two questions: what problems in developing countries could be addressed with time use data, and what methodological issues must be confronted in order to assure ourselves that the data have sufficient validity to be worth collecting. In the process of step 2, we will summarize methodology and results from ten studies of time use in developing countries. Since one or both of the authors played a major role in the development of two of the data sets described (Guatemala and Malaysia), this process involves self-analysis as well as armchair critiques.

Time use data allows us to examine some questions that are important for policy planning in developing countries. For instance, there is much evidence that rural women in agricultural societies have very long working hours. In parts of East Africa, women are working 16 hours a day, doing housework, child care, food preparation, and raising between 60 and 80 percent of the food for the family (Fagley, 1976). In the Upper Volta, Mossi women have only a little over one hour a day of free time in which to eat, perform personal care, become involved in community affairs, and socialize (McSweeney, 1979). In some societies, women work many more hours than men. Rural Japanese women work an average of 11 hours a day, while men (aged 20 to 29) work almost two-and-a-half hours less per day (Nag, Peet, and White, 1978). Women in rural Botswana work almost seven hours a day, whereas men work only five hours per day (Mueller, 1979a). In America, too, women are spending more time each day in work than are men, particularly employed women. Walker and Sanik (1978) report that a non-employed homemaker with two children will spend 7.6 hours a day working, and an employed women working eight hours outside the home may spend as much as 10½ hours per day in total work. Men's total work time may be several

hours less. We note with interest that in the decade from 1967 to 1977, men's average contribution to housework and child care (home production) has risen from 1.7 hours to 2.2 hours per day, a significant increase.

In the U.S., as in many developing countries, the presence of a young child in the household increases the women's workload considerably. However, this intensive time investment may be limited to the first year, as other family members begin to take over child caretaking tasks. Many economists and demographers speculate that one of the factors behind high birth rates in developing countries is the long-time benefit to the women of the assistance received from older children. In Laguna, Philippines, a mother with an infant under one year of age spends an extra ten hours per day in home production, including feeding, child care, and housework (Ho, 1979). As her children grow older, she has more time available, both because others take over the care of the youngest, and the needs of the youngest are not so great. She puts her additional time into market, or income-producing work. Only when the need for child care vanishes completely does she put her additional free time into leisure (Ho, 1979). In Botswana, also, women with more female help in the home spend more time in market work (Mueller, 1979b) than those without additional help.

Not only do children help with caretaking, but also they are a source of help economically and with home production. They begin to make contributions to the home from the age of three on in the Philippines (Navera, 1978). In Nepal, children from age six onward worked at least three-and-a-half hours per day at child care, home production, animal tending, or some productive task (Nag, Peet, and White, 1978). They may well have begun to contribute earlier, but the investigators arbitrarily limited themselves to children of ages six and over. In the Philippines, children contribute 30% of the families' full income (Quizon, 1978). Girls often work longer hours than boys. In Nepal, by the age of nine, girls are doing more productive work than are boys. In the Upper Volta, girls aged seven and older work 5.3 hours per day compared to less than an hour a day for boys (McSweeney, 1979). By the age of

nine, girls are putting in 7.4 hours per day compared to 2.8 hours for boys. This pattern is also found in the U.S.; girls did more household work than boys. In a study conducted in 1977, girls from six to eight were found to work 50 minutes a day at household tasks, whereas boys worked 40 minutes a day. We note that U.S. parents in this sample were not receiving the same amount of help that the parents in developing countries were and our birth rate is, as we all know, quite low.

These numbers are provocative and address issues that are extremely important for the welfare of the growing child. Each finding reported comes from an assessment of patterns of time use of family members in small samples scattered around the developing world. These figures can be used to address some of the issues confronting development patterns. For instance, planners would like to train women for different and better-paid work. Training sessions have at times met with only indifferent response. Our time use data suggests that many women's lives are filled with work already; they have no extra time to devote to training. Time use data can be used to determine what kinds of labor-saving devices would be most important to introduce in order to free women's time. Would they actually use the extra time for the purpose of training, or would they substitute more home production activities for leisure? Some evidence reported by McSweeney suggests that in one case, labor-saving devices simply served to give women more time to prepare an extra meal (McSweeney, 1979).

A second question concerns the children: What is the effect of a mother's employment on the welfare of children? As she spends more time away from home, who is taking over the feeding and child care responsibilities? Are their children's nutritional and psychological needs being met by substitute caretakers? Is there a tendency for women to have larger numbers of children in order to lighten their workload? Are older siblings, particularly girls, being kept out of school in order to watch younger children, becoming "little mothers?" Of course, the underlying question is whether there is enough similarity in these phenomena that we can

generalize from one situation and culture to another.

Two major changes in the developing economies have highlighted these issues recently: the increase in female employment, and the rise in women-headed households. But these effects are quite different in different parts of the world. In Latin America, unskilled young women are pouring into the cities in search of employment as domestics. In Southern and Eastern Africa, men are forced to migrate to the cities to find work, leaving women to farm the rural areas for long periods of time. Buvinic (1978) estimates that worldwide, between 20 and 30 percent of households are headed by women. In rural Botswana, Mueller (1979a) reports that fully 46% of households are woman-headed. Often these female-headed households are the most poor, and the women must work and find alternate systems for child care (Rivera, 1979; Engle, 1980).

These questions are critically important, and hard to study. Traditional measures that have been used in developing economies, such as employment and income questionnaires, often underrepresent women and children's contributions to the family income. Their work was undervalued, leading to the kinds of errors which incite feminists. In Kenya, for instance, agricultural training was offered to all the men in the area without inviting the women to participate, even though most of the food is raised by women (Pala, 1976). Time use data have allowed us to see the extent of women's and children's work and have given us a way to look at some of the choices that women make about their children in situations of scarce time resources. But the methods are not well defined, and too often are applied by people who, under pressures of time, different cultural situations, and lack of expertise, may short-circuit some of the necessary steps to collecting the kinds of data that meet quality standards in the quantitative social sciences. Unless some more stringent efforts are made to improve the quality of data being collected, and to amass an understanding of the value of these kinds of data, we run the risk of having the method lose favor before it is established. In the developed countries, as we have just seen in other

papers in this symposium, substantial methodological work has been performed on the measures, and they offer great promise for understanding complex problems. However, in developing economies, many of the problems in data collection and validity are more problematic than in developed economies and less well studied.

In this survey, we examine ten studies using time use methodology in developing countries. There are other reports, mostly unpublished, but we think that our sample is representative. The studies are from disparate parts of the world, and most are based on fairly small samples. In the remainder of this paper, we will examine the methodological adequacy of these studies, and suggest areas in which they could be improved.

Methods of Data Collection

Three kinds of methods have been used to assess families' time use: observation, recall, and writing a diary. Table I summarizes the ten studies and the methods each used. Observation of what people do and for how long they do it is probably the most accurate method of collecting the information, but the time required to collect the data make it almost prohibitive. Also, the presence of an observer is likely to affect the subjects' behavior. In spite of these limitations, two of the studies summarized have used direct observation: Nag, Peet, and White in Nepal (1978), and Navera (1978) in the Philippines. A slightly different observational method was used by anthropologists Johnson and Johnson (1975). They set up a randomized schedule of visits to all of the families in their sample of 13 households. At each visit, they recorded what each member of the family was doing the moment before the family became aware of their presence. With enough observations on each person in the sample, they could construct a total percent of time each day that was spent at each activity.

Asking people to recall what they did in previous days has been the most popular method and the most controversial. If accurate information can be obtained with recall, it is obviously much cheaper and simpler to have people report their activities than to observe what they actually did. Two methods have been used. In the sequential method or "yesterday interview" used by White (1976) in Java, Mueller in Botswana (1979), Loucky (1981) in Guatemala, and Cain (1977) in Bangladesh, a person is asked to reconstruct his activities sequentially over a period of time, usually 24 hours. He is asked when he started and when he finished each activity in which he participated. A different method was used in the Guatemalan, Philippine, and Malaysian data sets. In the activity recall method, the respondent is asked whether he did a particular activity in a previous time period (a day, week, or maybe even month), and, if appropriate, when he started and stopped the activity. A problem with this method is that the categories

that the respondents will use are predetermined. Time spent in non-listed activities is not recorded. An advantage is that the subjects' attention is focused on those activities of particular interest to the investigator. Michelson (1981) uses a combination of both strategies; he first asks the mother to recall the previous day's activities in sequence and then probes for specific activities that might have been forgotten. This combined method appears to be one of the more fruitful.

In self-report, or diary methods, the subject records his daily activities on a provided form. This method may be effective in developed economies, such as the one that Goldberg is studying, but we cannot assume that individuals in developing economies who may be illiterate are capable of recording the information. To our knowledge, this method has not been tried in those settings.

Summary of Studies

Table 2 shows our ranking of the ten studies on 12 methodological issues. Not all of the factors involved in quality data collection have been covered. For instance, interviewer selection and training, language, development of a usable form, quality control in the field, and how to move from written records to computer files are not covered. Coding recall responses in a form that will eventually be usable is perhaps the biggest stumbling block. Pages and pages of detailed description may be so time-consuming to transcribe to computer that they remain unanalyzed for years.

The rankings may appear quite harsh. We must remember that standards for analyzing grouped data may not be as stringent as those for individual-level analyses. But those who collect time use data are beginning to be more interested in relationships such as the effects of maternal time in food preparation on children's nutritional status. Therefore, the purpose of this list is to focus attention on issues that are necessary for analyzing data at the individual level, and to make a plea for raising the priority of methodological issues.

We address four general issues of concern:

- reliability of the data
- validity of the data
- method of coding time use
- quality of coverage of the data

We then rate each study's handling of each issue according to four criteria of adequacy:

- did the investigators consider or discuss the issue
- did they collect data to address the issue
- did they analyze it (a step that does not always follow)
- did they alter their methodology, if necessary as a result of these analyses?

The last column shows the percent of studies that met a strict criterion of adequacy: that the investigator considered the issue, collected data to address the issue, and changed his methods as a result of the analyses, if indicated. Basically, this investigator would have had a "yes" in all columns.

A quick review of the table suggests that few issues have been adequately considered. For instance, a central question concerns the validity of recall data. Are people reporting what they actually did? What kinds of things are forgotten, and are events remembered that never occurred? Of the seven studies that involved recall, only one reported data addressing this issue. In Laguna, Philippines (Quizon, 1978), the investigators report that parents' reports of their activities and observations were quite equivalent; but parents reported only half of the work that children were observed to do. The details of this particular validation study are extremely skimpy; it is not even clear whether the same families were both observed and interviewed. Certainly they were not observed on the same days about which they were interviewed.

One is tempted to be slightly appalled that such a fundamental question as the relationship between what one does, and what one says one does has received such little systematic investigation in these studies in developing countries. We can probably

assume that people's ability to recall and reconstruct events of previous days will depend to a large degree on their beliefs, expectations, and affective state. In addition, recall will probably be affected by culture and literacy. Cain's (1977) comment on his time budget research in Bangladesh is an honest estimate of a common situation: "Systematic checks of the quality of recall data must involve direct observation. I intend to implement such checks but have not yet been able to spare the time." (p. 14). Again, this statement reflects lower priorities of methodological issues plus real constraints in the field.

Reliability

Reliability over time. Mueller, Clark, and Kossoudji (1978) identified three issues affecting the reliability of a single report of the previous day's activities. Are patterns of time allocation similar from day to day? How many observations are necessary to sample activities that do not occur daily? What are the variations by day of the week that must be taken into account? And finally, they raised the issue of what seasonal variations must be considered. In agricultural economies, these are extremely important.

Reliability over time has been addressed in studies in the developed countries (e.g., Dunn and Goldberg, 1979) but has not been addressed with data in any of these ten LDC studies. It appears, however, that many of the LDC data sets include enough sampling points in time that an analysis could be done, similar to that performed by Dunn and Goldberg (1979), comparing total variation in one day across all mothers with variation within a single mother across all days.

Reliability of observer. It would also be desirable to assess interobserver reliability for both observations and recall interviews. For instance, do two interviewers obtain similar amounts of information from the same woman? Does the same woman report the same information about one day's activities if asked at two different times? Although the latter is difficult to assess, the former would be quite easy to measure, and could be examined in many existing data sets. However,

it was of concern to only one investigator, and no investigator reports conclusions.

Would unreliable data cast doubt on the meaningfulness of a study's conclusions? These issues are of more concern if associations between time use and outcome are examined. Variability among interviewers, if it is random, will be of less concern if data are aggregated. To some extent, problems related to infrequent and seasonal activities depend on the research purpose. However, day-to-day variability, and the number of days necessary to assess in order to have a meaningful value, need to be considered.

Validity - We identify four issues concerning "validity" or accuracy of reports; these focus on the relation between what people say they did and what they actually did. These issues arise only when a person is asked to report on a previous behavior, which occurs in seven of our ten studies.

Recall vs. observation - We have mentioned the importance of comparing recall with observed behavior over the same period. Such procedures, undertaken in England (Douglas, et. al., 1975), the United States (Dunn and Goldberg, 1979), and Canada (Michelson, 1979), produced intriguing results about what is forgotten, commonly including events of short duration, affectionate interactions with children, negative interactions with children, and passive activities. Mueller, et. al. (1978) summarize a number of such findings from the United States. Unfortunately, we have relatively little information of a similar sort from developing countries. These issues of reporting accuracy are of great importance for interpreting any data set, but relevant information from developing countries is very scarce.

Reasonableness of time estimates - A second method for assessing data validity is to see whether estimates of time use are reasonable. Mueller (1976b) suggests a few checks: are children less likely to go to school on Sundays? Do mothers report spending more time in child care when there is an infant in the house? Of our seven studies using recall data, one adequately handled this issue of reasonableness.

Time awareness of respondents - How accurately can a person in a developing country know the time at any particular moment or the duration of time spent doing a particular activity? How do people code and recall the time they spent in doing things? A large literature on this topic exists in anthropology, and it has been considered extensively in the landmark time use study by Szalai and associates (1972). Of our seven studies, five investigators reported an awareness of this issue. None were rated adequate. White (1976) reports that he asked a number of people in his Javanese village what time it was, and most could inform him of the hour within a 15-minute range. In Guatemala we noted that a number of people had radios and watches, although certainly not all worked. This issue could be easily addressed, and an awareness of people's understanding of time could facilitate questioning methods enormously Without it, the data remain questionable.

Validity of reporting the behavior of others - Can a mother report accurately what all of her children were doing the previous day? Can a husband report on his wife's activities? This does not seem to be an issue that investigators are concerned about, since many of the reports did not even specify clearly who was asked to report on the previous day's or weeks' activities, and under what circumstances a person other than the actor was questioned. The only systematic comparison on parents' and children's activities was done in the Philippines (Quizon, 1978), and indicated that parents tended to substantially underrate their children's work. Both Cain (1979) and Mueller, et. al,(1978) recommend strongly that each person be interviewed about his own activities.

Issues of Coding - A person's report of his or her activities is likely to be a continuous record, a story of events. How can these be organized, categorized, stored and analyzed without losing the "emic" or local cultural meaning of the activities? Of course, the coding system depends to a large extent on the researcher's purposes. Our major concern here is not with the specific categories developed, but the researcher's ability to justify the categories she or he has decided to use.

Work activities categories - Since most of the work reported has been done by economists, this coding system has received the most attention.

Child caretaking activities - Only two studies attempted to define "child care" more specifically. Those which broke it into its component parts (e.g., Quizon, et. al., Philippines, 1978) have reaggregated the results for presentation, since some of the categories that a psychologist would consider interesting are so infrequently remembered. In order to look at cognitive and nutritional consequences of caretakers' time patterns, we will need to find better systems for defining target child care practices of interest. For instance, we need to define which aspects of child care are educational and which are recreational. What does the parent consider "child care?"

Joint activities - One of the major problems in all time use studies is that people are frequently involved in several activities at the same time. Child care and food preparation, in particular, are frequently performed in conjunction with other activities. Six investigators considered this problem, but none collected data to address it. Some strategies were to assume that only one activity could be done at a time, or that if two activities were performed at the same time, each required only half of the time. Goldberg (1977) has suggested some solutions for coding levels of child care in the U.S., which Michelson (1979) found promising. These should be tried in developing countries. This is a problem of major significance for those interested in patterns of child caretaking.

Justification for age classifications of children - Many of the studies summarized have been undertaken by demographers or economists interested in the economic contribution of children and the effects of these contributions on mothers' fertility decisions. Fascinating questions are raised, such as the compatibility of mothers' work and child care (DaVonzo and Lee, 1978, in Malaysia) and how old the child must be before the mother returns to market work. Most investigators have examined economic activities of children aged six or seven and older, and have

looked at the child care needs of children under six as a group. This kind of grouping is most unfortunate. It is clear to developmentalists that the child caretaking needs of a three-month-old infant are vastly different from those of a five-year-old. In fact, in many of these societies, children as young as four are expected to play a role in the caretaking of their younger siblings. Mueller (1979a) expected to find that women in Botswana with children aged zero to six were spending less time in market (income-producing) work than women without young children, but no such depression in time use was noted. Yet, when she looked at the effects of having children aged zero to two years on the mother's workload, her results were more similar to the findings in the Philippines: the presence of a young child increased the woman's home production time and decreased her market time (Mueller, 1980). This is, of course, not a surprise, but illustrates the need for greater awareness of developmental processes in these critical early years in the design of time use surveys. The most logical approach would be to assess the age at which developmental changes that have significance for child caretaking patterns occur in the local culture before beginning the time use survey. For instance, at what age do children begin to walk, introducing a new set of caretaking demands? At what age does the time-consuming process of spoon feeding a newly-weaned child occur? Awareness of these cultural patterns would facilitate decisions about the age groupings of children in the sample. It would also avoid determining children's ages, which may be a problem in developing countries.

Quality of Data Issues

Sample coverage - It is clear that asking people to recall what they did in previous days or months can be an extremely intrusive procedure. One would expect that the number of individuals who refuse or who choose to report only partial information would be a major problem. This seems to be an issue of some concern, addressed in six of the ten studies (it is not clear what was done in two studies),

and none seem to feel that the data were compromised by refusals. However, data were rarely reported.

Quality of time use - Ideally, we could collect information on both quantity and quality of time use. This is particularly important if we wish to determine the intensity of work or the quality of a parent's time with his children. This has been of interest to five of our ten investigators. Four have collected information on the wage rates of adults and children in order to calculate the relative incomes of adults and children in the societies, and the fifth examined the caloric expenditure of men and women's work in Amazonian Peru (Johnson & Johnson, 1975). Combining estimates of quantity and quality of caretaking time in developing economies would be a fruitful direction.

Our last concern is the appropriateness of the data analysis for the data. The summary is very revealing; two studies (Loucky, 1981, and the Guatemalan data set) have not yet been fully analyzed (Clark's 1981 paper is the first to use the Guatemalan data set). Of the remaining nine, seven relied on aggregated tabulations only. We located only three reports: Mueller (1979a); Ho (1979), DaVonzo and Lee (1978) that have applied measures of association (primarily regressions) to the time use data. Mueller (1979a), for instance, predicted time spent working as a function of the family's household membership and number of assets. However, regressions predicting time spent in various activities are clearly the next step for a number of investigators, and we hope that they spend the extra time and effort necessary to shore up the psychometric qualities of the time use figures before plowing ahead. We will also be taking much of this advice to heart, and to the computer center.

Conclusion

We have identified important problems that time use data are uniquely prepared to address in the developing world. We also raised various methodological issues that we, and other investigators, have yet to confront rigorously. Relatively few of the issues raised have been examined in the ten studies summarized. Does the lack of adequacy of the methodology affect the value of the results? Clearly, yes. Should the results be discarded as erroneous? It is too soon to tell. The next few years hopefully will allow us to begin establishing methods of cross-checking this information. Are practices in this field significantly lower than standards for other information collected by economists, demographers, and psychologists in developing countries? Yes; on the whole, time use data has not met the standards of other kinds of data collected in developing countries. Does it matter? In spite of those technical limitations, both the methodology and the findings have drawn much attention from various agencies. For instance, the United Nations Economic and Social Council prepared a report on the statistics of time use data in 1979; a workshop on Time Use Data was sponsored by the Asia Society in New York on September 15, 1978, and brought together a number of investigators from developing countries to explore uses and policy implications of time use statistics. One of the most recent issues of Studies in Family Planning focused on women's time use and fertility (1979). We must conclude that this methodology has sparked much interest and has been seen as promising. But, on the other side, much of it remains untested, unvalidated, and unanalyzed. Probably the backlog of unanalyzed data is greater in this area than in many others, as it is so difficult to code and analyze systematically. At this point, there is a clear need for further analysis of existing data sets and for increased priority to methodological issues.

Patricia L. Engle and William P. Butz
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TABLE I

Survey of 10 time use studies in developing countries: Country, sample size, and method of data collection

Author	Country	Sample	Methods
Observation Method			
Navera (1978)	Philippines	97 households	Observation in 3 separate 24-hour visits.
Nag, Peet, and White (1978)	Negal	45-50 households	Mainly observation supplemented by interview; 1/month for 7-10 months.
Johnson (1975)	Amazonian Peru	13 households, 105 members	Spot checks on households on a random basis over 1 year period
Sequential Recall Method			
Loucky (1981)	Guatemalan Highlands	37 households	24 hour recall by all family members, and spot observations (random visits)
Cain (1977)	Bangladesh	120 parents and children age 4+	24 hour recall of events from 5:00 previous day to 5:00 on day of interview. 1 survey every 15 days for 2 months.
Mueller (1979)	rural Botswana	957 households, 4700 individuals	Activities and times recalled for day prior to interview for every person over 6 in the household.
White (1976)	rural Java	20 households, 104 individuals	24-hour recall of events from 5:00 of previous day to 5:00 on day of interview, every 6th day for 1 year.
Activities Recall Method			
Ho (1979)	Laguna Philippines	573 households	Respondent was presented with a list of activities and asked how much time each household member had spent on each activity during the past week.
Malaysian Family Life Survey Butz (1979) also DaVonza and Lee (1978)	peninsular Malaysia	1262 families in round 1, 1207 in founds 2 and 3	Same as above; also asked about number of weeks activity was performed in last 4 months and children who accompanied respondent.
Clark (1981) and INCAP-Rand Guatemalan Survey	rural and semi-urban Ladino Guatemala	800 families, over 1600 individuals	Respondent presented with activities and asked how many of them were performed previous day, and for how many hours (to 10 minute intervals) and in previous week; 4 rounds, 3 months apart.

TABLE 2

Adequacy On Methodological Issues: Summary of 10 Time Use Studies in Developing Countries

Issue	Discussed Issue	Collected data to address issue	Analyzed data addressing issue	Analyses affected methods	Adequacy on issue a
Reliability (N=10 studies)					
Reliability over time	70%	50%	10%	10%	0
Inter-observer reliability	30	20	20	20	10
Validity (N=7 studies)					
Recall compared to observation (concurrent validity)	57	43	29	29	0
Reasonableness of time estimates (construct validity)	86	66	33	17	14
Time awareness of respondents	86	14	0	0	0
Accuracy of person reporting behavior of others	86	43	14	0	0
Coding/justification for categories (N=10 studies)					
Justification for child age categories	30	22	11	11	0
Justification for work activity cat.	70	66	33	33	10
Justification for using child caretaking activities other than "child care"	20	20	10	10	0
System for coding joint activities	60	0	0	0	0
Quality of coverage of sample (N=10 studies)					
Missing data or refusals	75	71	43	43	14
Quality of time assessed	60	60	60	30	0
Appropriateness of data analytic strategies	76 tabulations only 2 regressions 1 not yet analyzed				

Notes: If not clearly specified, study was dropped from sample for that item.
a-Assessed for those who might have had this problem. Uses highest standard of adequacy.

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